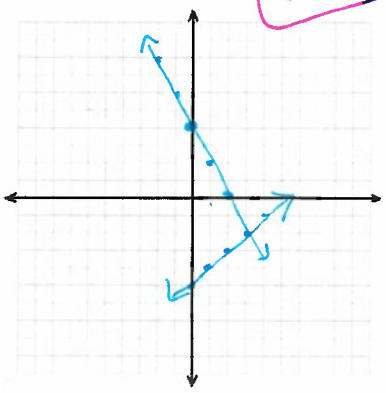
6.1–6.3 REVIEW

Name: Key

For #1-3: Solve each system by graphing.

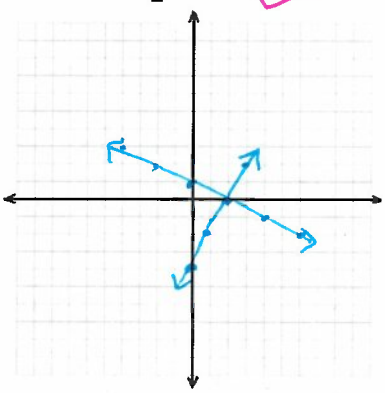
1. $y = -2x + 4$
   $y = x - 5$

(3, -2)



2. $y = 2x - 4$
   $y = -\frac{1}{2}x + 1$

(2, 0)

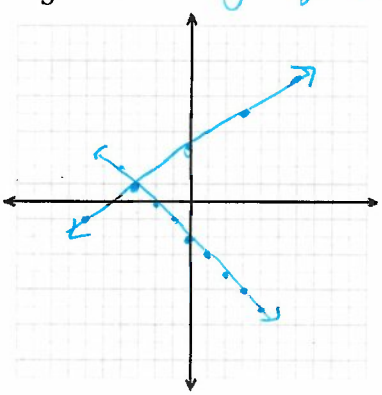


3. $x + y = -2$
   $-\frac{2}{3}x + y = 3$

(-3, 1)

$y = -1x - 2$

$y = \frac{2}{3}x + 3$



For #4-9: Solve each system by substitution. Show your work!!

4. $y = \frac{4}{3}x - 2$
   $3y - 4x = -6$

$3(\frac{4}{3}x - 2) - 4x = -6$

$4x - 6 - 4x = -6$

$-6 = -6$

many solutions

5. $y = 3x - 14$
   $y - x = 10$

$(3x - 14) - x = 10$

$2x - 14 = 10$

$+14 \quad +14$

$\frac{2x}{2} = \frac{24}{2}$

$x = 12$

$y = 3 \cdot 12 - 14$

$36 - 14$

$y = 22$

(12, 22)

6. $y = 3x - 4$
   $y - 3x = 1$

$3x - 4 - 3x = 1$

$-4 = 1$

No Solution

7. $y = 2x + 5$
   $y = 6x + 1$

$2x + 5 = 6x + 1$

$-2x \quad -2x$

$5 = 4x + 1$

$-1 \quad -1$

$\frac{4}{4} = \frac{4x}{4}$

$x = 1$

$y = 2(1) + 5$

$y = 7$

(1, 7)

8. $x = y + 7$
   $y - 8 = 2x$

$y - 8 = 2(y + 7)$

$y - 8 = 2y + 14$

$-y \quad -y$

$-8 = y + 14$

$-14 \quad -14$

$y = -22$

$x = -22 + 7$

$x = -15$

(-15, -22)

9. $4x + y = 2$
   $3y + 2x = -1$

$y = -4x + 2$

$3(-4x + 2) + 2x = -1$

$-12x + 6 + 2x = -1$

$-10x + 6 = -1$

$\quad -6 \quad -6$

$\frac{-10x}{-10} = \frac{-7}{-10}$

$x = 7/10$

$y = -4(7/10) + 2$

$y = -4/5$

(7/10, -4/5)

For #10-15: Solve each system by elimination/combination. Show your work!!

10. $2x + 5y = 2$
$3x - 5y = 53$

$5x = 55$
$5 \quad 5$
$x = 11$

$2(11) + 5y = 2$
$-22 \quad -22$
$5y = -20$
$5 \quad 5$
$y = -4$

(11, -4)

11. $4x + 2y = 34$)2
$10x - 4y = -5$

$8x + 4y = 68$

$18x = 63$
$18 \quad 18$
$x = 7/2$
$y = 10$

(7/2, 10)

$4(7/2) + 2y = 34$
$14 + 2y = 34$
$-14 \quad -14$
$2y = 20$
$2 \quad 2$
$y = 10$

12. $11x - 13y = 89$
$-11x + 13y = 107$

$0 = 196$

No Solution

13. $3x + 6y = 42$)7
$-7x + 8y = -109$)3

$21x + 42y = 294$
$-21x + 24y = -327$

$66y = -33$
$66 \quad 66$
$y = -1/2$

$3x + 6(-1/2) = 42$
$+3 \quad +3$
$3x = 45$
$x = 15$

(15, -1/2)

14. $2x - 5y = 17$)-3
$6x - 15y = 51$

$-6x + 15y = -51$

$0 = 0$

Many Solutions

15. $3x + 2y = 5$)-5
$4x + 5y = 16$)2

$-15x - 10y = -25$
$8x + 10y = 32$

$-7x = 7$
$-7 \quad -7$
$x = -1$

$3(-1) + 2y = 5$
$+3 \quad +3$
$2y = 8$
$2 \quad 2$
$y = 4$

(-1, 4)

16. You have a total of 21 coins, all nickels and dimes. The total value is $1.70. How many nickels and how many dimes do you have?

x = nickels
y = dimes

$(x + y = 21) \cdot -.05$
$.05x + .10y = 1.70$
$-.05x + -.05y = -1.05$
$.05y = .65$
$.05 \quad .05$
$y = 13$

$x + 13 = 21$
$-13 \quad -13$
$x = 8$

8 nickels
13 dimes

17. A student bought 3 boxes of pencils and 2 boxes of pens for $6. He then bought 2 boxes of pencils and 4 boxes of pens for $8. Find the cost of each box of pencils and each box of pens.

x = pencils y = pens

$(3x + 2y = 6) \cdot -2$
$2x + 4y = 8$
$-6x - 4y = -12$

$-4x = -4$
$-4 \quad -4$
$x = 1$

$3(1) + 2y = 6$
$-3 \quad -3$
$\frac{2}{2}y = \frac{3}{2}$
$y = 1.5$

$1 for pencils
$1.50 for pens

18. Last season two running backs on the Steelers football team rushed for a combined total of 1550 yards. One rushed 4 times as many yards as the other. How many yards were rushed by each player?

x = player 1 y = player 2

$x + y = 1550$
$y = 4x$

$x + 4x = 1550$
$\frac{5x}{5} = \frac{1550}{5}$
$x = 310$

$y = 4 \cdot 310$
$y = 1240$

player 1 = 310 yds
player 2 = 1240 yds

19. On Monday Joe bought 10 cups of coffee and 5 doughnuts for his office at the cost of $16.50. It turns out that the doughnuts were more popular than the coffee. On Tuesday he bought 5 cups of coffee and 10 doughnuts for a total of $14.25. How much was each cup of coffee?

x = coffee y = doughnuts

$(10x + 5y = 16.50) \cdot -2$
$5x + 10y = 14.25$
$-20x - 10y = -33.00$

$\frac{-15x}{-15} = \frac{-18.75}{-15}$
$x = 1.25$

$10(1.25) + 5y = 16.50$
$12.5 + 5y = 16.50$
$-12.5 \quad -12.5$
$\frac{5y}{5} = \frac{4}{5}$
$y = .80$

$1.25 for coffee
$0.80 for doughnuts

20. **Level 4 (Optional)**: A chemistry teacher needs to make 10 L of 42% sulphuric acid solution. The acid solutions available are 30% sulphuric acid and 50% sulphuric acid, by volume. How many liters of each solution must be mixed to make the 42% solution?

4 mL of 30% sol.
6 mL of 50% sol.